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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,384	06/27/2003	Jeffrey W. Carr	CARR-01000us4.002	7970

7590 08/23/2005

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EXAMINER

VINH, LAN

ART UNIT PAPER NUMBER

1765

DATE MAILED: 08/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/608,384

Applicant(s)

CARR, JEFFREY W.

Examiner

Lan Vinh

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1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 7/28/2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date. _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Applicant's Terminal Disclaimer, filed 7/28/2005, with respect to the rejection of claims 1-39 under judicial obvious-type double patenting have been fully considered . The rejection of claims 1-39 under judicial obvious-type double patenting has been withdrawn.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-12, 16-20, 35, 37 are rejected under 35 U.S.C 102(b) as being anticipated by Fleming et al (US 5,000,771)

Fleming discloses a method for manufacturing an article comprises the steps of:

rotating/translating the workpiece with respect to a plasma torch (col 5, lines 13-14, fig. 1)

using the plasma fireball to etch the preform/workpiece and to form residual oxide on the preform (col 5, lines 26-27; col 6, lines 35-40), which reads on using reactive

atoms plasma processing to add material to the surface of the workpiece and modify the surface with the discharge from the plasma torch

The limitation of claims 2, 5 have been discussed above

Regarding claims 3-4, Fleming discloses that silica formed as vapor material being removed from the silica preform surface (col 6, lines 39-40), which reads on altering the chemistry of the surface of the workpiece. Fleming is also silent about the damage to the workpiece underneath the surface

Regarding claim 6, Fleming discloses the step of exciting the plasma by a RF coil and RF generator (col 4, lines 48-50)

Regarding claims 7, 26, Fleming discloses placing a discharge gas in a central tube/channel of the plasma torch (fig. 1), using the gas/precursor to control the etch rate (col 9, lines 10-23)

Regarding claims 8-10, Fleming discloses selecting/controlling the flow rate of the etchant in the plasma from 1 l/min (col 7, lines 4-6)

Regarding claim 11, Fleming discloses introducing a gas through a tube 16/outer tube of the plasma torch (fig. 1)

Regarding claim 12, Fleming discloses coupling RF coil/energy to an annular region of the plasma torch (fig. 1)

Regarding claim 16, Fig. 2 of Fleming shows that the plasma gas is introduced tangentially

Regarding claim 17, Fleming discloses maintaining the temperature of the plasma at greater than 9000⁰ C (see abstract)

Regarding claim 18, Fleming discloses that the residual oxide can be completely swept away (col 6, lines 40-43)

4. Claims 1, 19 are rejected under 35 U.S.C 102(e) as being anticipated by Seo et al (US 6,534,921)

Seo discloses a method for removing residual material comprises the steps of:
rotating/translating the workpiece with respect to a plasma jet/torch (fig. 1)
using the plasma to deposit the dielectric layer, etching the dielectric layer to form the hard polymer (col 7, lines 15-33), which reads on using reactive atoms plasma processing to deposit material on the surface of the workpiece, removing the polymer by the plasma jet (col 7, lines 30-32), which reads on modifying the surface with the discharge from the plasma jet/torch

Regarding claim 19, Seo discloses that the plasma occurs at atmospheric pressure (col 7, lines 48-49)

5. Claim 36 is rejected under 35 U.S.C 102(e) as being anticipated by Seo et al (US 6,534,921)

Seo discloses a method for removing residual material comprises the steps of:
rotating/translating the workpiece with respect to a plasma torch (fig. 1)
using the plasma to deposit the dielectric layer, etching the dielectric layer to form the hard polymer, transforming the polymer (col 7, lines 15-33), which reads on using

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reactive atoms plasma processing to deposit and redistribute material on the surface of the workpiece

6. Claims 38-39 are rejected under 35 U.S.C 102(e) as being anticipated by Seo et al (US 6,534,921)

Seo discloses a method for removing residual material using a plasma jet system comprises:

a translator/means for translating /rotating the wafer/workpiece (fig. 1)

a plasma generator to deposit material on the surface of the wafer/workpiece (col 7, lines 15-20), which reads on means for using reactive plasma processing to deposit material on the workpiece

a plasma jet/plasma torch to remove the polymer from the surface of the wafer/means for modify the surface with the discharge from the plasma torch (col 7, lines 27-30)

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
8. Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fleming et al (US 5,000,771) in view of Seo et al (US 6,534,921)

Fleming method has been described above. Unlike the instant claimed inventions as per claims 13-15, Fleming fails to disclose the step of introducing an auxiliary gas through a second concentric tube to keep hot plasma away from a central channel of the plasma torch/to adjust the position of a discharge

Seo discloses a method for removing residual material using a plasma jet system comprises the step of introducing an a gas through a second tube to cool plasma away from a central channel of the plasma torch (col 10, lines 26-45)

One skilled in the art at the time the invention was made would have found it obvious to modify Fleming method by adding the step of introducing an a gas through a second tube to cool plasma away from a central channel of the plasma torch as per Seo because according to Seo, the gas radical diffuse into the downstream region of the plasma and as the radical diffuse, their temperature cool down through radical expansion in a radial direction, i.e, the cross section of the radial interaction with the wafer/workpiece expands (col 9, lines 40-49)

Response to Arguments

9. Applicant's arguments filed 7/28/2005 with respect to the rejection(s) of claims 1-39 under 35 U.S.C 102 and 103 have been fully considered but they are not persuasive.

Applicants argue that independent claims 1, 35, 37 shapes or cleans a surface of a workpiece by adding or depositing material instead of vaporizing to the surface as in Fleming. This argument is unpersuasive because it does not commensurate with the scopes of claims 1, 35, 37 since claims 1, 35, 37 do not specifically recite/require shaping or cleaning a surface of a workpiece by adding or depositing material to the surface of the workpiece

Applicants also argue that the reactive atoms plasma processing in claims 1, 35, 37 is by a natural process of chemical reactions between the material and the surface rather than a physical process as in Fleming. This argument is unpersuasive for the following reasons: it does not commensurate with the scopes of claims 1, 35, 37 since claims 1, 35, 37 do not specifically recite/require that the reactive atoms plasma processing is by a natural process of chemical reactions between the material and the surface, the claim language of "comprising" does not limit the claim invention to a reactive atom plasma processing/exclude the other process from being performed

Applicants argue that independent claims 1, 35, 37 shapes or cleans a surface of a workpiece by adding or depositing material instead of removing metal-containing material using a plasma jet system as in Seo. This argument is unpersuasive because it does not commensurate with the scopes of claims 1, 35, 37 since claims 1, 35, 37 do

not specifically recite/require shaping or cleaning a surface of a workpiece by adding or depositing material to the surface of the workpiece

Applicants further argue that the present invention does not limit the material to those material in Seo. This argument is found unpersuasive because it is noted that the claim language of "comprising" also does not exclude those material in Seo.

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lan Vinh whose telephone number is 571 272 1471. The examiner can normally be reached on M-F 8:30-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571 272 1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



LV
August 21, 2005